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ABSTRACT

The Ashland City School District (Ohio) conducted a study to identify possible reasons for the academic failure of 10th graders. Forty-eight high risk students who had failed to pass one or more subtests of the Ohio Proficiency Test were compared with 48 students who had passed all subtests in eighth grade and were considered low risk academically. Findings suggested that indicators reflecting regular attendance in school were unrelated to academic risk in 10th grade. Results also suggested that academic risk was related to retention in kindergarten, confirming that retention did not have long-term benefits. The high-risk students were at risk academically in the third grade, and they were never able to catch up. Letter grades and achievement tests were useful for identifying these students early. Findings further indicate that the intervention strategies used for high-risk students need to be reviewed. (Contains 12 figures and 8 references.) (SLD)

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Longitudinal patterns of school success among academically high and low risk tenth graders

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Presentation to the Annual Meeting of the Mid-West Research Association, Chicago, October 14-17, 1998.

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Longitudinal patterns of school success among academically high and low risk tenth graders.

Rationale for the study.

Ashland City School District is concerned with the proportion of tenth grade students who still failed two or more of the Ohio Proficiency Tests. Not only is there a concern for helping those students achieve fundamental knowledge and skills, but their failure has implications for being subject to State minimum performance standards. Failure to meet the performance standards requires that a continuous improvement plan be developed and monitored by the State. Thus, the District was interested in identifying possible reasons for the tenth grade students' failures in order to head off a problem and to build a database available for possible improvement plans.

Similar studies appear in the literature, but focused on dropouts and non-graduates (e.g., Barrington and Hendricks, 1989) or were short term in nature (e.g., Ekstrom, Goertz, Pollack , and Rock, 1986). In order to have time to intervene with students at risk, our study was designed to expand the number of risk factors at more points in time for students who still had two and a half years of high school left.

Methods and Analysis.

With the help of District officials the following evaluation research was designed. Possible indicators of being academically at-risk were developed. The District predictions and the research literature provided some suggestions for what those indicators might be: retention of students, high absenteeism, student changing schools, and early indication of academic failures. All tenth graders who, as of the Fall 1996, failed to pass two or more of the subtests of the Ohio Proficiency Tests were identified. This resulted in forty eight students (out of 352 sophomores or 14 %) who were categorized as High Risk: 22 girls and 26 boys. A comparison group of forty eight was selected consisting of the same proportion of boys and girls who had passed all subtests of the Ohio Proficiency Tests on the first administration to them in their eighth grade. This group was categorized as Low Risk.

Each student's cumulative record was located and a six-person team reviewed each record, recording the data specified. The percentages of students with grades of "A" or "B" in the four subject areas (reading, math, language arts, and social studies), starting with third grade, were computed. Median percentile scores from the Iowa Tests of Basic Skills in the four subject areas at grades 4, 6, and 8 were

computed.

All data were compiled using the spreadsheet software *QuattroPro*. The data were checked for errors of entry or coding. Once validated, general descriptive statistics were computed: mean, standard error, median, and percent. Missing data were evident among all variables, particularly among those students who transferred into the district. Although 48 students were in each group, the number that each comparison was based upon varied from 36-46. Some variables were not used in the study because they were based on a number of students lower than this cut-off.[1] Comparisons were made between Low Risk 10th Graders and High Risk 10th Graders. Graphic displays were built for each variable and appear in Figures 1a through 12.

Results and Discussion.

Absenteeism. No differences in mean days absent were noticeable until the 7th grade. At that point High Risk students showed more absences than the Low Risk students. The variability in scores was similar between the two groups.[2] (See Figs. 1a & 1b.)

Changed Schools. No differences in the percent of students who changed schools was evident between the Low and High Risk group. The 1st Grade (25%) and the 4th Grade (20%) had the highest percent of students changing schools. Variability in the percent was similar between the two groups.[3] (See Figs. 2a & 2b.)

Tardies. The mean days tardy differed at the 2nd, 7th, 8th and 9th Grades. The High Risk student was more likely to be tardy. With the exception of the 2nd Grade, it is likely that the difference found at the upper grades is due to cumulative effect of lack of success. The variability in scores differed between the two groups. (See Figs. 3a & 3b.)

Retention. The only difference between groups on the number of retained students was in Kindergarten. There the High Risk group surpassed the Low Risk Group by three times the percent retained. The variability in scores was similar between the two groups. (See Figs. 4a & 4b.)

Chapter 1 Remedial Program. Two percent (1 of 41 students) of the Low Risk students had every participated in the Chapter 1 program in first, second, and third grade. The High Risk group had considerable experience with the program: 28% (12 of 43 students) participation in first grade, 12% in second, 5% in third.

Mathematics Grades. The differences between the Low Risk and High Risk groups on the percent of "A" or "B" grades was consistently 40-60%age points

higher in favor of the Low Risk group. The greatest gap was in 5th Grade, the smallest gap was in 9th Grade. Eighth grade was found to have the highest percentage of "A"s or "B"s for both groups. The variability in percent was similar between the two groups. Most of the High Risk students' grades at ninth grade are from the remedial math class. (See Figs. 5a & 5b.)

Reading Grades. The Low Risk and High Risk groups consistently differed by 40-60%age points on the number of "A"s or "B"s, with one exception...3rd Grade. The Low Risk students had greater than 80% of their grades "A"s or "B"s, while High Risk students were highest at 40%. The High Risk group showed a large drop in performance from 3rd to 4th Grade. The variability in percent was similar between the two groups. (See Figs 6a & 6b.)

Language Arts Grades. The differences between the Low Risk and High Risk groups on the percent of "A" or "B" grades were consistently 40-50%age points in favor of the Low Risk group. For both groups a 20%age point decline from 3rd Grade to 9th Grade is evident. There appears to be less grade consistency or variability among the Low Risk students, particularly in Grade 5. (See Figs. 7a & 7b.)

Social Studies Grades. The Low Risk and High Risk groups differed by 60%age points on the number of "A"s or "B"s, except for the 4th Grade Level. As with the Reading Grades, the High Risk group had a large drop in the number of "A"s or "B"s from 3rd to 4th Grade. Additionally, the High group had a very low percentage of "A"s or "B"s in 9th Grade. The consistency or variability in percent was rather consistent between the two groups except at the 9th Grade. (See Figs. 8a & 8b.)

Reading Achievement. The Low Risk group consistently had median percentile scores from 75-80, whereas the High Risk students were 50%ile points lower. In 8th Grade the High Risk group median was lower than the 30%ile in reading. (See Fig. 9.)

Mathematics Achievement. A similar pattern to Reading Achievement was found for Math. The Low Risk students consistently scored from the 75-80%ile in Math, but their High Risk peers scored 50%ile points lower. Similarly, the 8th Grade had the lowest median Math percentile scores: less than the 30%ile. (See Fig. 10.)

Language Arts Achievement. The differences between the Low Risk and High Risk group were 40-50%ile points, favoring the Low. The Low group was consistently scoring at a median between the 80-85%ile. Again, 8th Grade was a watershed for falling grades among the High Risk: a 20%ile point drop to the

25%ile. (See Fig. 11.)

Social Studies Achievement. A slightly less consistent pattern was found with Social Studies: a 30-50%ile point difference, favoring the Low Risk group. The Low Risk group median was between 75-80%ile. The High Risk group scored below the 30%ile in 6th Grade and 8th Grade. (See Fig. 12.)

Conclusions

Indicators reflecting regular attendance in school were unrelated to academic risk in tenth grade. Absenteeism, changing schools, and tardies were no different for Low or High Risk students through the elementary grades. In Middle School a change in the pattern was noted. Greater absences and tardies were found among the High Risk group. It is likely that the continued lack of success (i.e., the academic data discussed in the next paragraph) makes school a place to avoid. As students grow older and more independent, they are more able to do just that.

The benefit of retaining students without providing coordinated interventions is questionable. The present study suggests that academic risk was related to retention in Kindergarten. High Risk tenth graders were much more likely to be retained than Low Risk students. This confirms the general research findings that retention does not have long term benefits (Shepard and Smith, 1989) and may even increase the chance of academic difficulties later (Lloyd, 1978). Retention before third grade, developmental kindergarten, and transitional first grades have equivocal results. Students tend to do better short term, but the effect washes out after third grade (Karweit and Wasik, 1993; Shepard and Smith). Furthermore, retained students, when their achievement is matched to non-retained peers, are more likely to drop out of school (Lloyd). The results of the present study and existing research raises a serious question about the benefit of retaining students without providing coordinated, differentiated interventions.

The High Risk students were at risk academically in third grade and they apparently never were able to catch up. Academic variables were clearly related to academic risk. Low Risk students had much higher grades and test scores than High Risk students. Letter grades and standardized achievement test results suggested a consistent, longitudinal pattern: High Risk students, as early as third grade and through the ninth grade, under perform their Lŏw Risk peers. Success in early grades does not guarantee success throughout school, but lack of success early on does virtually ensure lack of success in later schooling (Barrington and

Hendricks, 1989; Slavin, Karweit, and Wasik, 1993). The consequences of failing to learn the fundamentals in the early grades is related to severe difficulty in learning other subject material later on.

Letter grades and achievement tests are useful performance indicators in the lower grades. The use of letter grades and test scores in middle elementary school and beyond have merit as indicators of academic success in later grades. In fact, the identification of potential at risk students can be accomplished as early as third grade. Third grade was the youngest grade level with routine tests or grades. Perhaps even younger children could be detected if the data were available. Of interest is the suggestion from the results that contradicts conventional wisdom regarding attendance factors as useful school performance predictors.

The intervention strategies used for the High Risk students need to be reviewed. For seven years of students' records, letter grades and achievement test results were consistently low for the High Risk students. The results suggest we have good indicators of academic risk, but regrettably, educators do not have ready access to the longitudinal data . The academic evidence is available, it needs to be shared with faculty to determine strategies to reverse the trend of failure.

Recommendations

Recommendations essentially follow a continuous improvement model of school evaluation.

1. Collect, distribute, and review grade and achievement data reported in this study.
2. Document and review intervention strategies and how they are linked to data.
3. Consider developing coordinated, differentiated early grades intervention strategies with thorough monitoring for evaluation of effectiveness. See Slavin et al. for suggestions.
4. Defend the use of grades and standardized achievement tests as important assessment information, even at the elementary level, for longitudinal monitoring of student performance.
5. Consider "student-based" professional development (Duke, 1992/3) following an inclusion model to include the following goals:
   A. Sharing the evaluation research results.
   B. Develop case review teams with broad expertise.
   C. Select students in need of intervention
   D. Refer students to the case review team.
   E. Develop 'Instructional Assistance Plans' (IAPs).

F. Using an inclusion approach, develop in-class professional development.
G. Implement IAPs.
H. Evaluate, review progress, and adjust.

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Notes

1. Letter grades at the primary level in the subject areas are not generally reported. Standardized test results in grades K, 1, 2, 3, 5, and 7 were available on anywhere from 5 to 30 students. Thus no analyses were completed on these variables.

2. Variability is an estimate of how spread out individual responses are from the mean. The more spread out the scores the *more variability*, the less spread out the *less variability*. Typically the measure of variability is the standard error of the mean and aids in estimating how discrepant the sample mean is from the population mean, i.e., how different is the sample from the population.

When the population mean is known, as in the case of the High Risk students (they comprise all the High Risk 10th graders), the variability conveys solely a measure of how spread out the scores are and can be used to make a comparison to the Low Risk sample. Remember the Low Risk group is a sample selected from all the possible Low Risk 10th graders.

3. Variability of proportions (percent is a proportion) helps us estimate how different the percent found in the sample is from the percent found in the population. The measure of this consistency is the standard error of the proportion and estimates a margin of error within which we are likely to find the true percent (i.e., the percent of the population). Again, the High Risk group is a population so we use the margin of error for comparison to the Low Risk sample.

FIGURE 1 a.

MEAN DAYS ABSENT

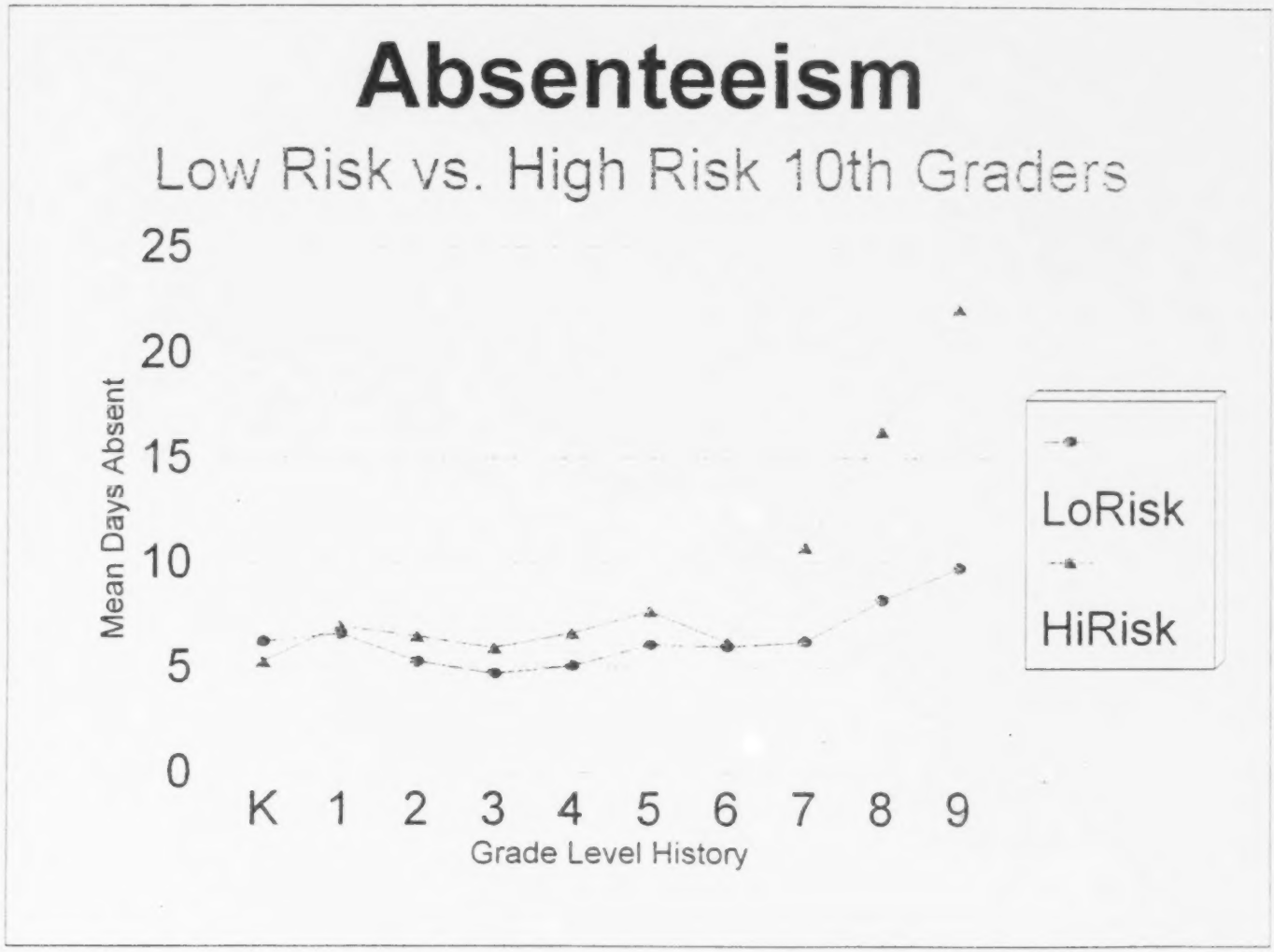

FIGURE 1 b.

VARIABILITY IN MEAN DAYS ABSENT

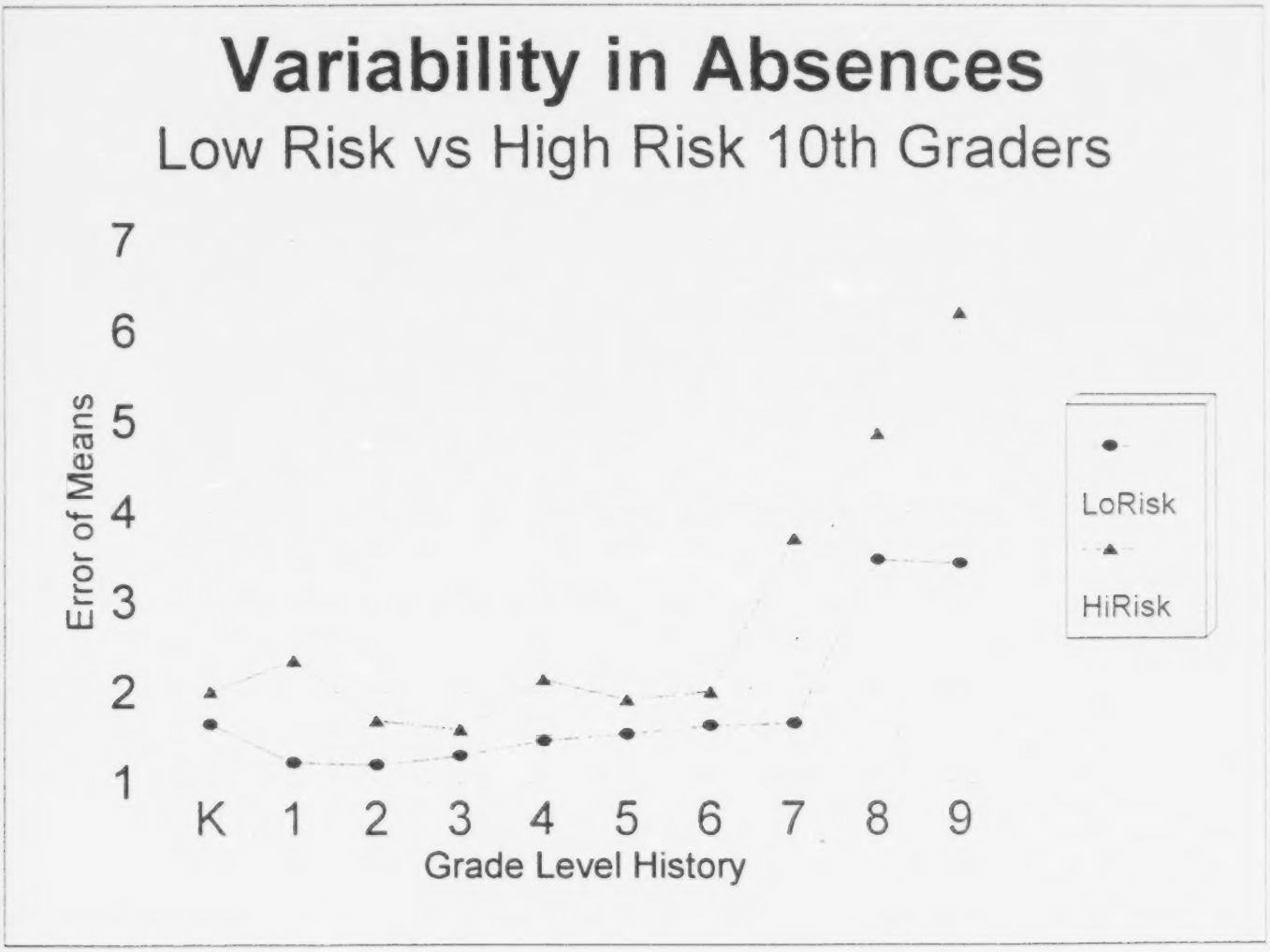

FIGURE 2 a.

PERCENT OF STUDENTS CHANGING SCHOOLS

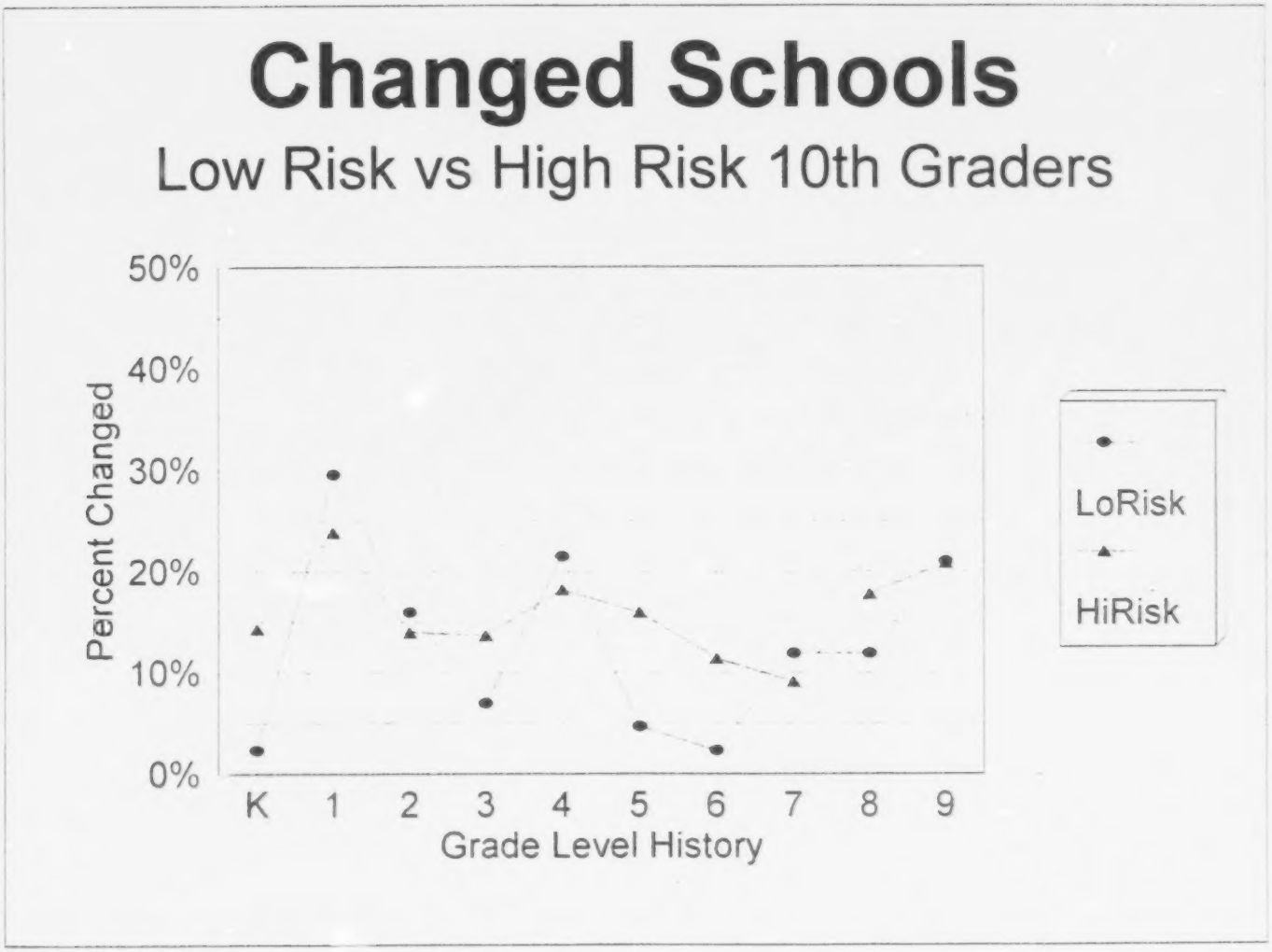

FIGURE 2 b.

VARIABILITY IN PERCENT OF STUDENTS CHANGING SCHOOLS

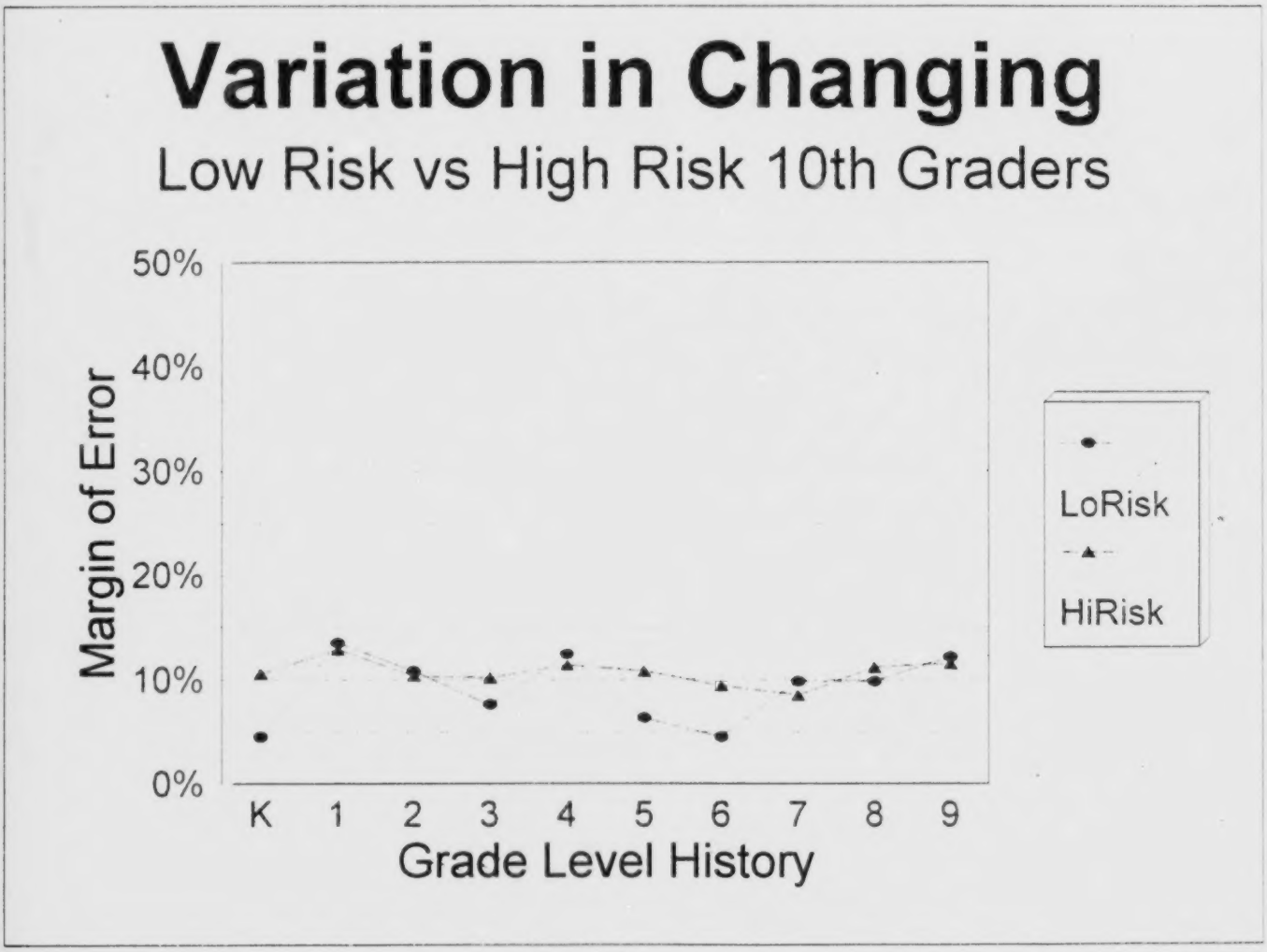

FIGURE 3 a.

MEAN NUMBER OF DAYS TARDY

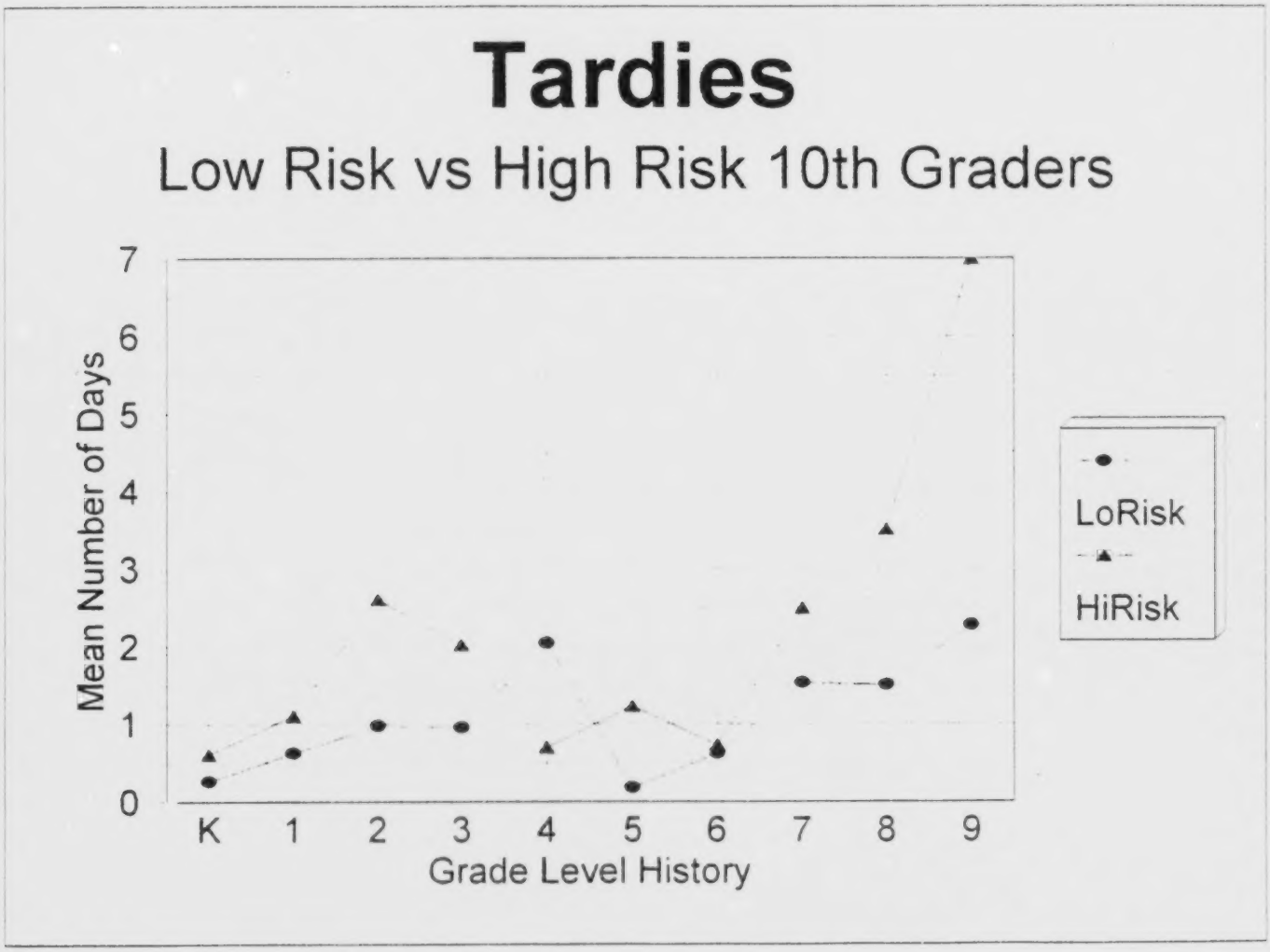

FIGURE 3 b.

VARIABILITY IN MEAN DAYS TARDY

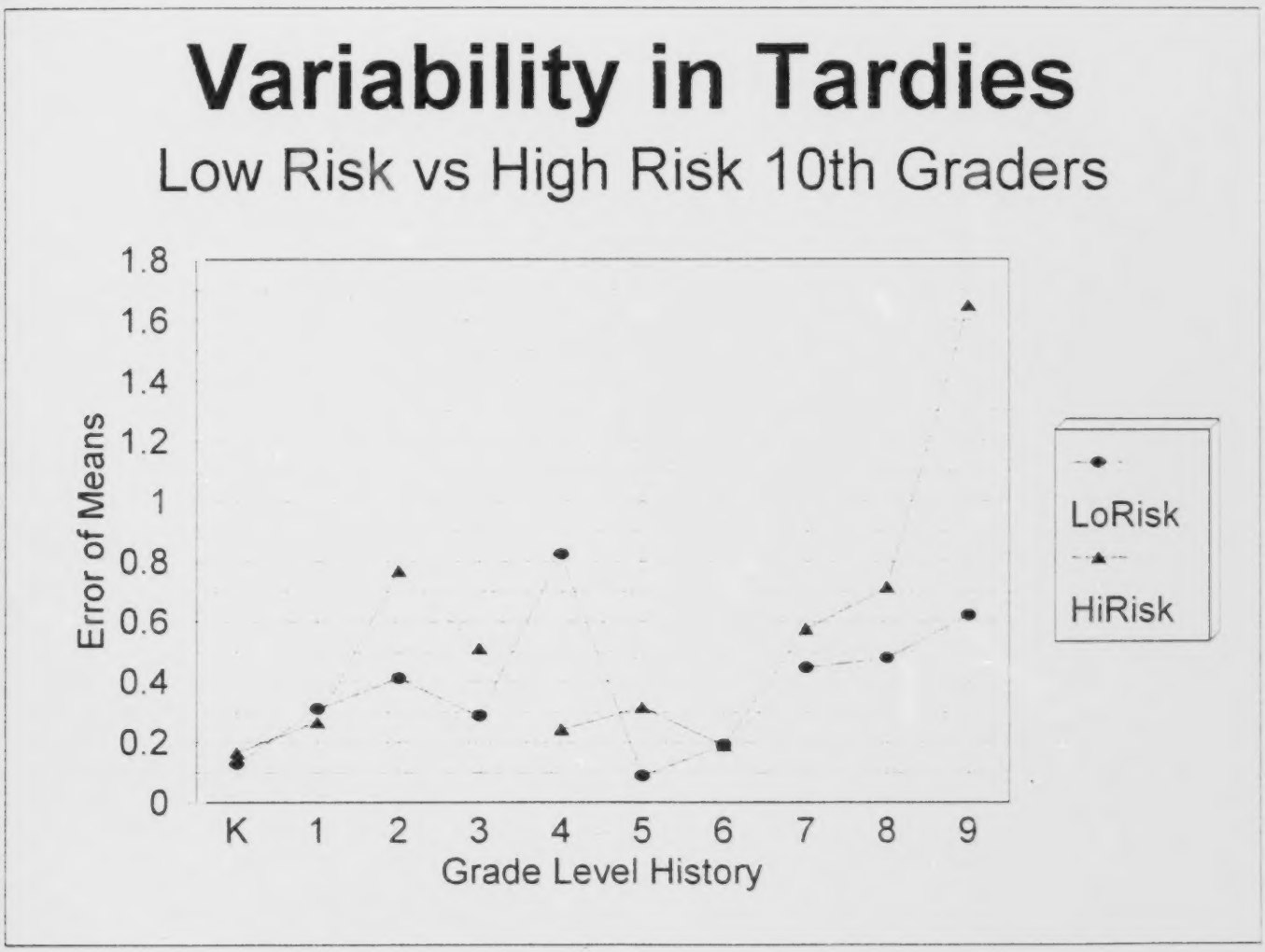

FIGURE 4 a.

PERCENT OF STUDENTS RETAINED A GRADE

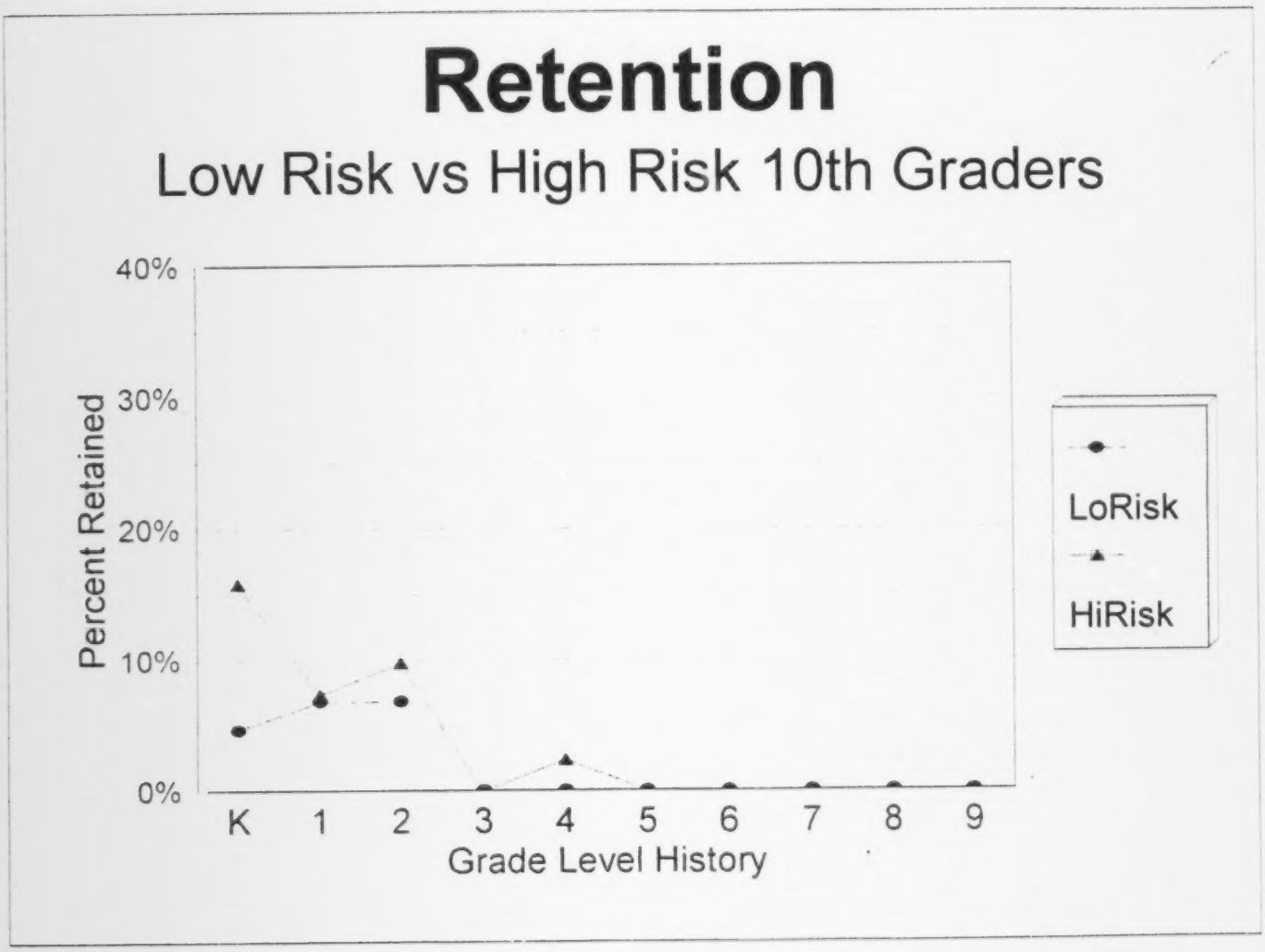

FIGURE 4 b.

VARIABILITY IN PERCENT OF STUDENTS RETAINED A GRADE

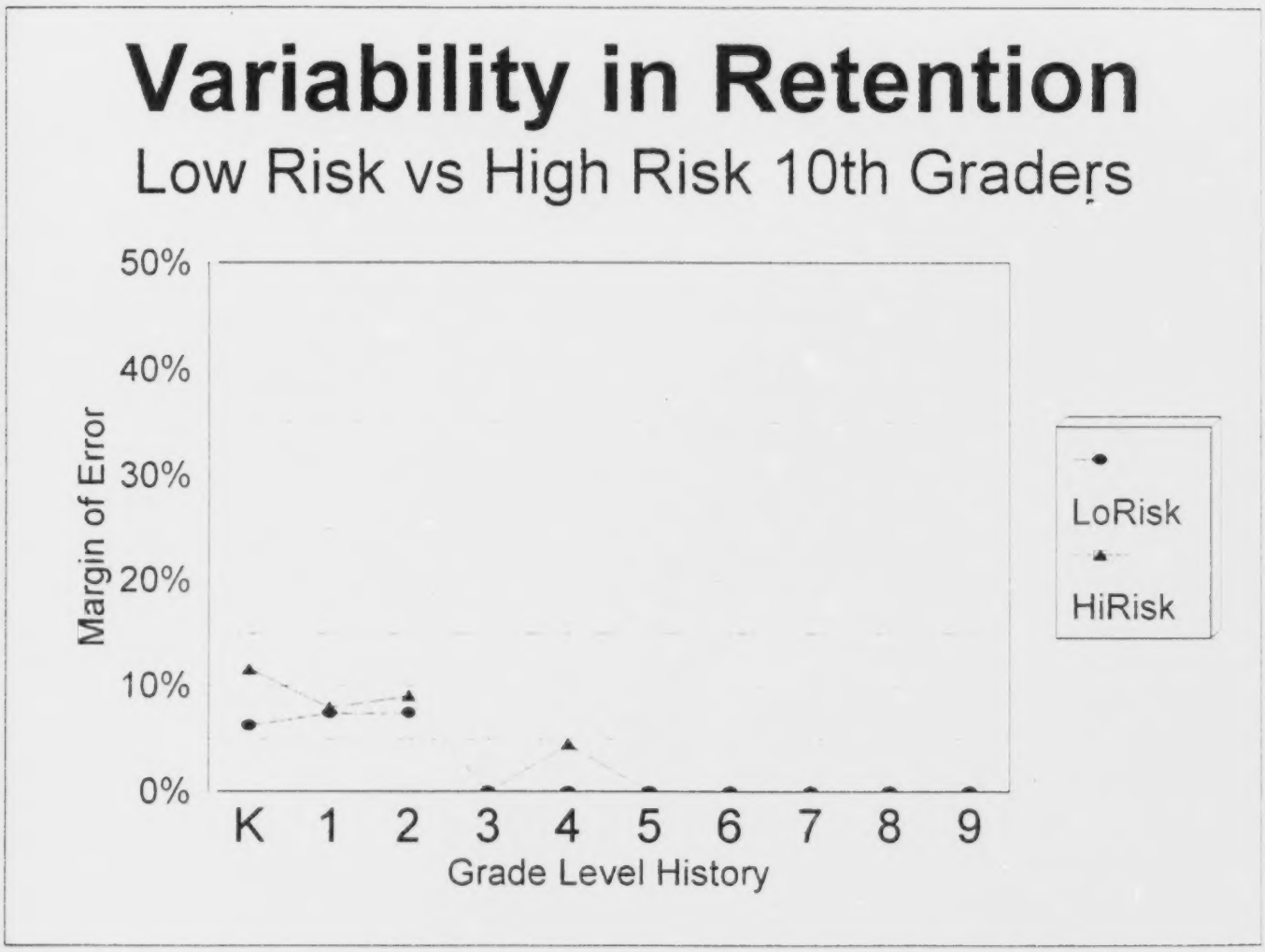

FIGURE 5 a.

PERCENT OF STUDENTS RECEIVING GRADES "A" OR "B"

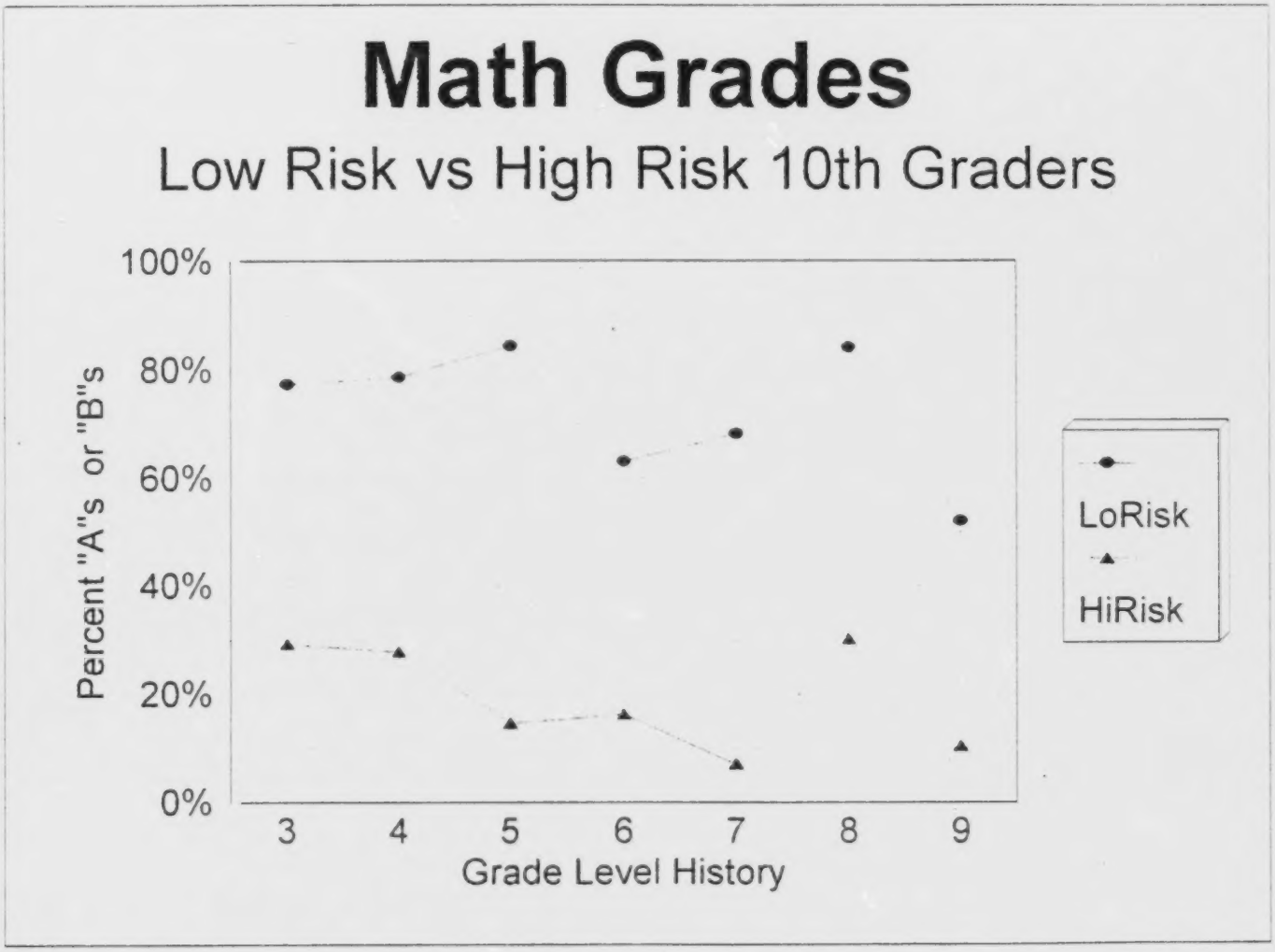

FIGURE 5 b.

VARIABILITY OF PERCENT OF GRADES "A" OR "B"

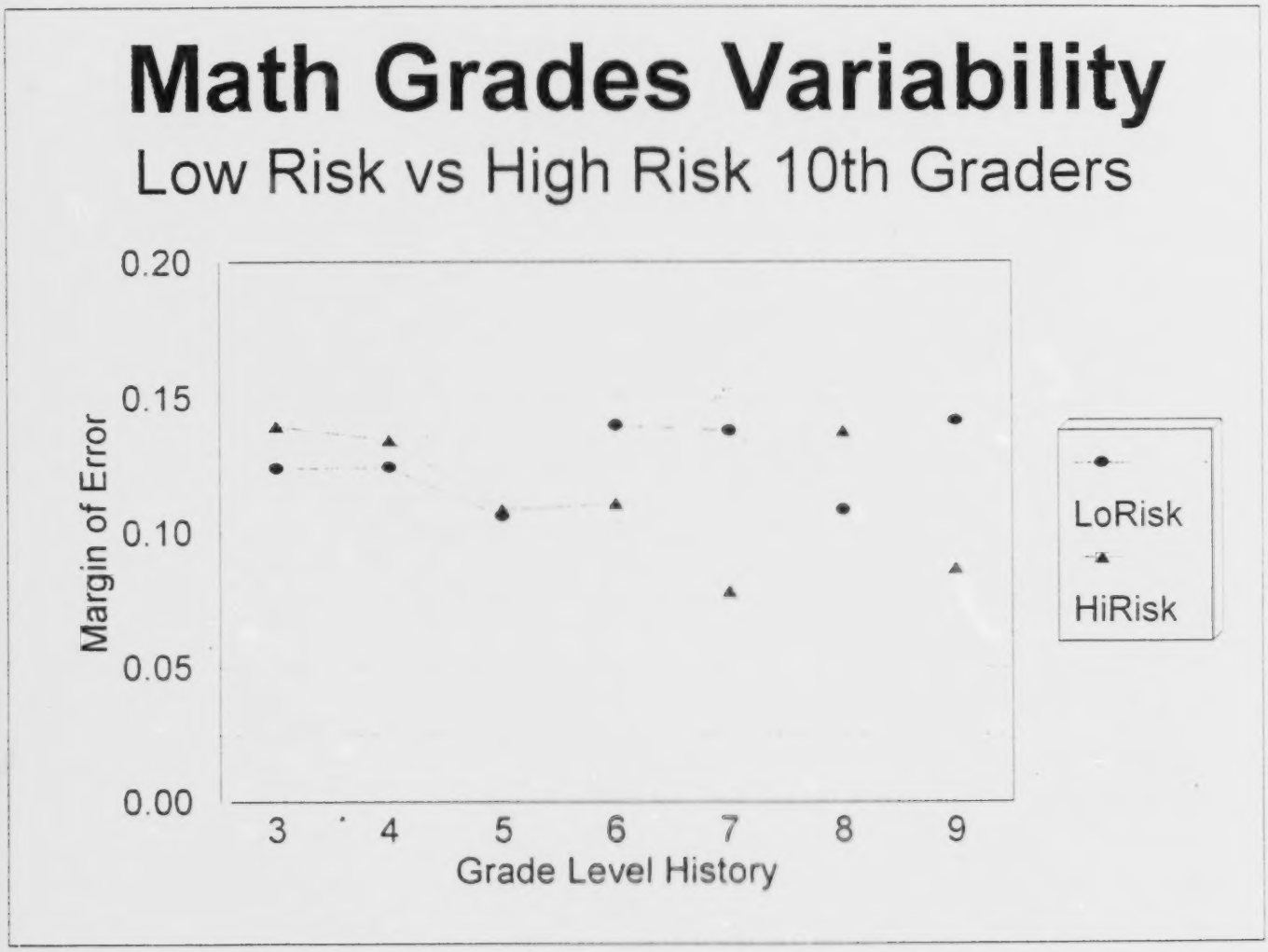

FIGURE 6 a.

PERCENT OF STUDENTS RECEIVING GRADES "A" OR "B"

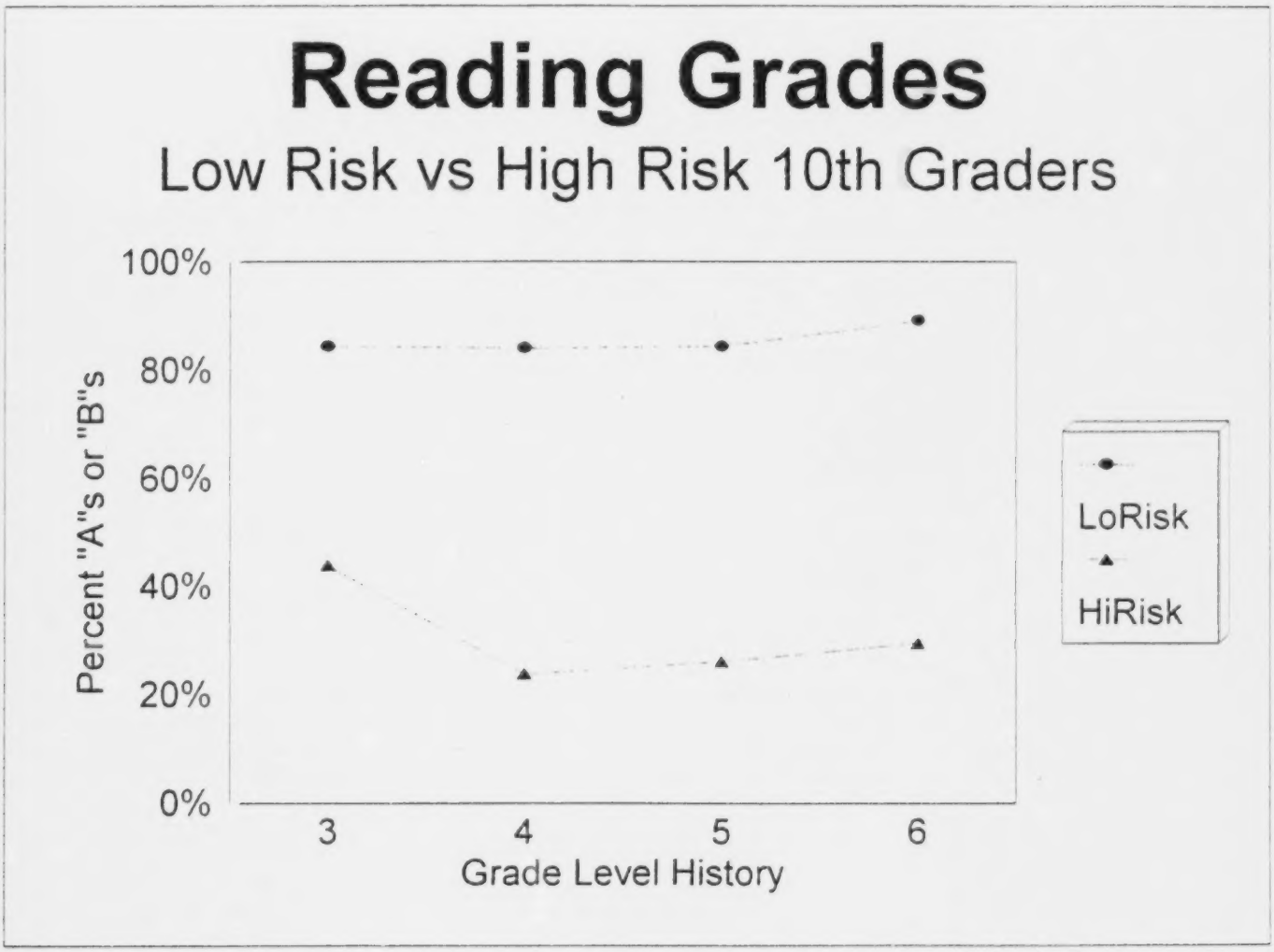

FIGURE 6 b.

VARIABILITY OF PERCENT OF GRADES "A" OR "B"

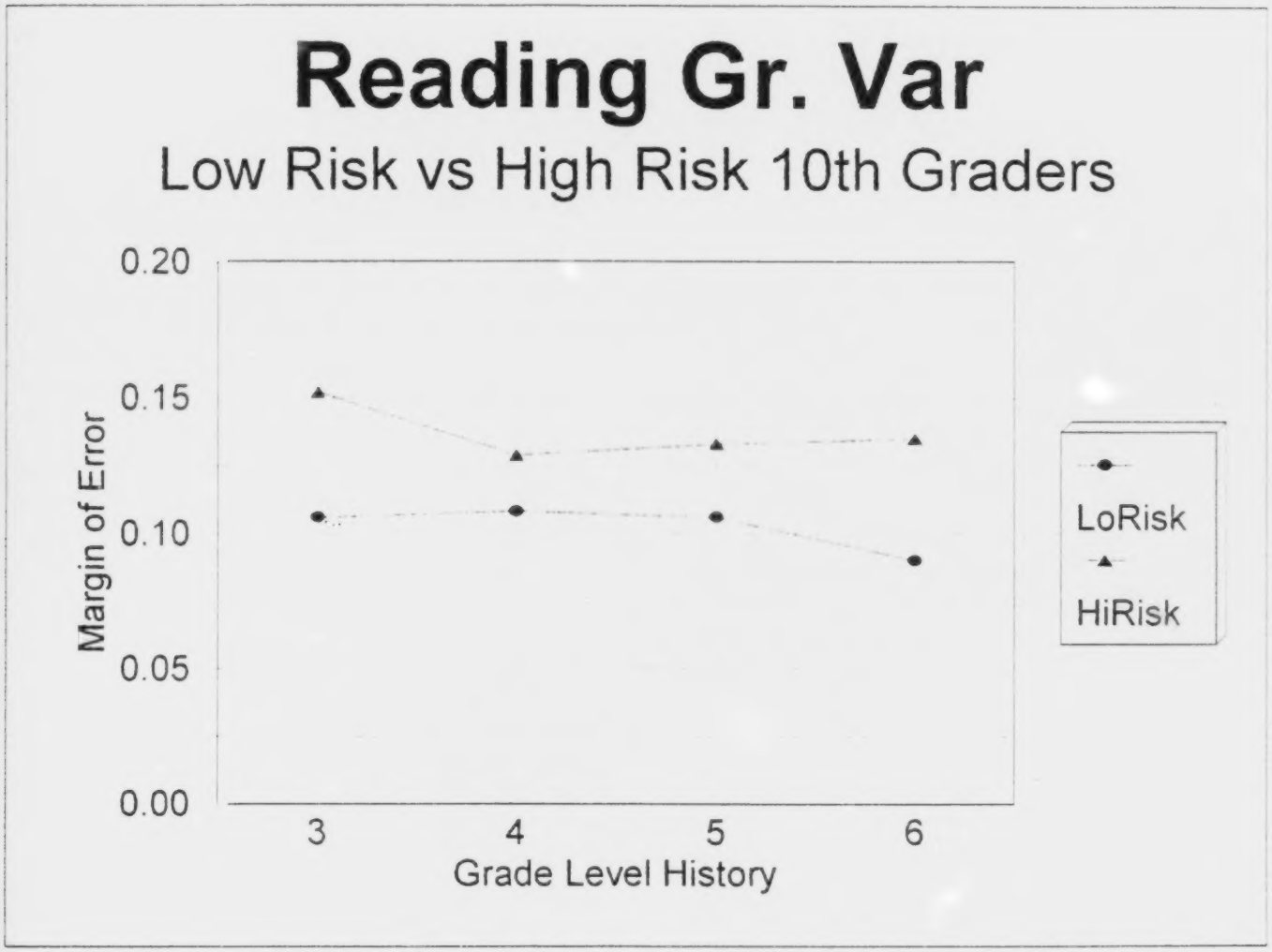

FIGURE 7 a.

PERCENT OF STUDENTS RECEIVING GRADES "A" OR "B"

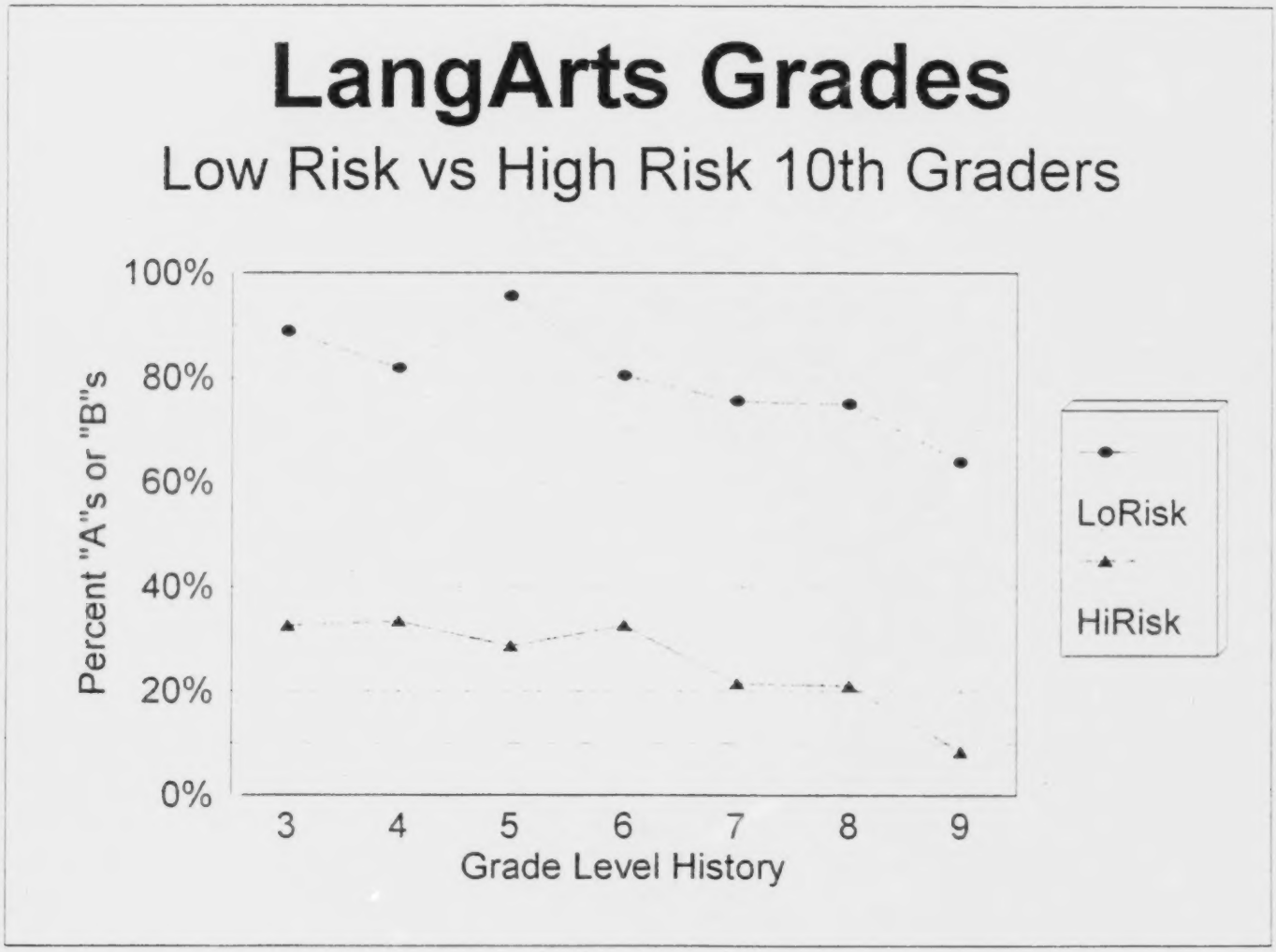

FIGURE 7 b.

VARIABILITY OF PERCENT OF GRADES "A" OR "B"

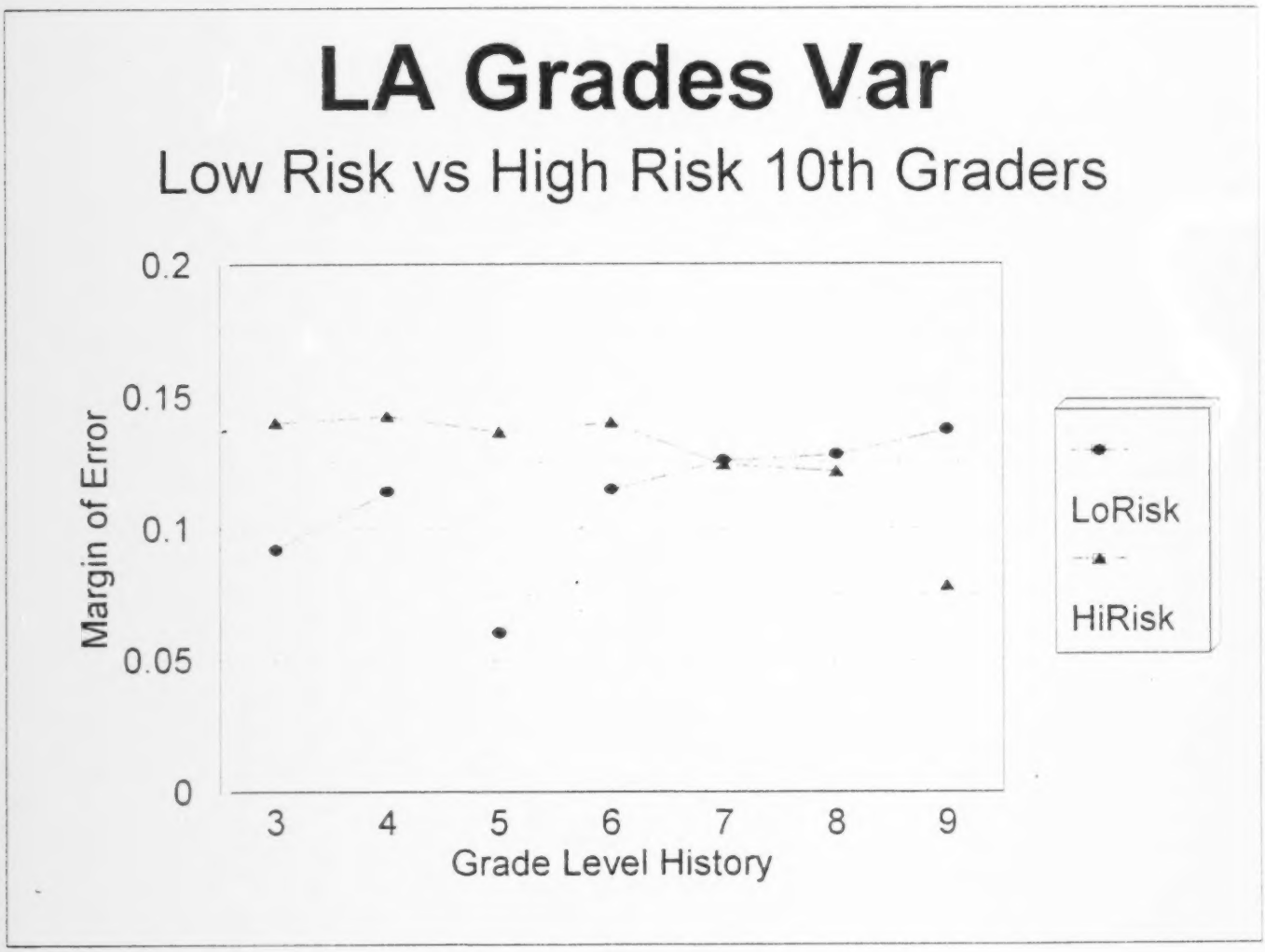

FIGURE 8 a.

PERCENT OF STUDENTS RECEIVING GRADES "A" OR "B"

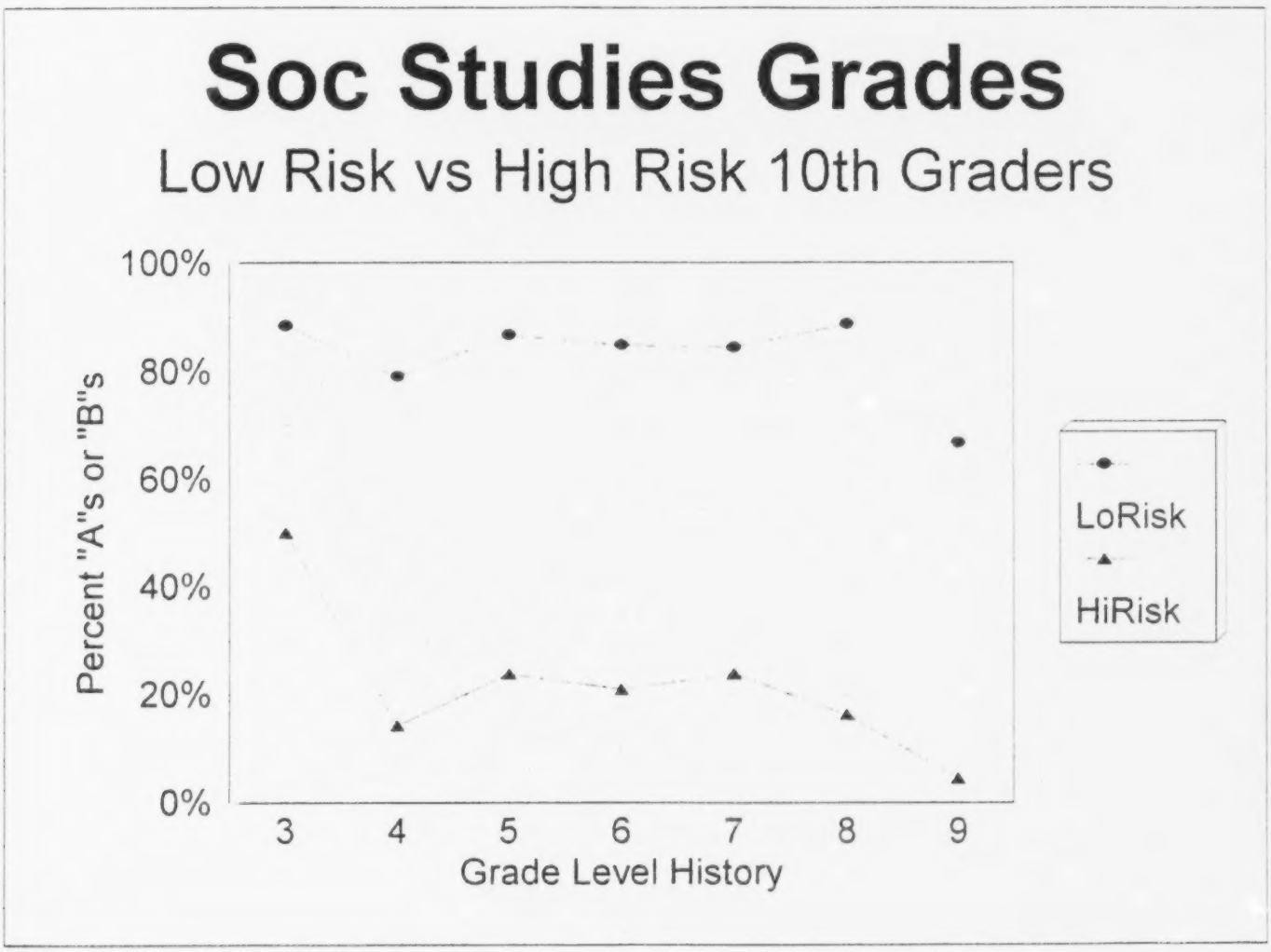

FIGURE 8 b.

VARIABILITY OF PERCENT OF GRADES "A" OR "B"

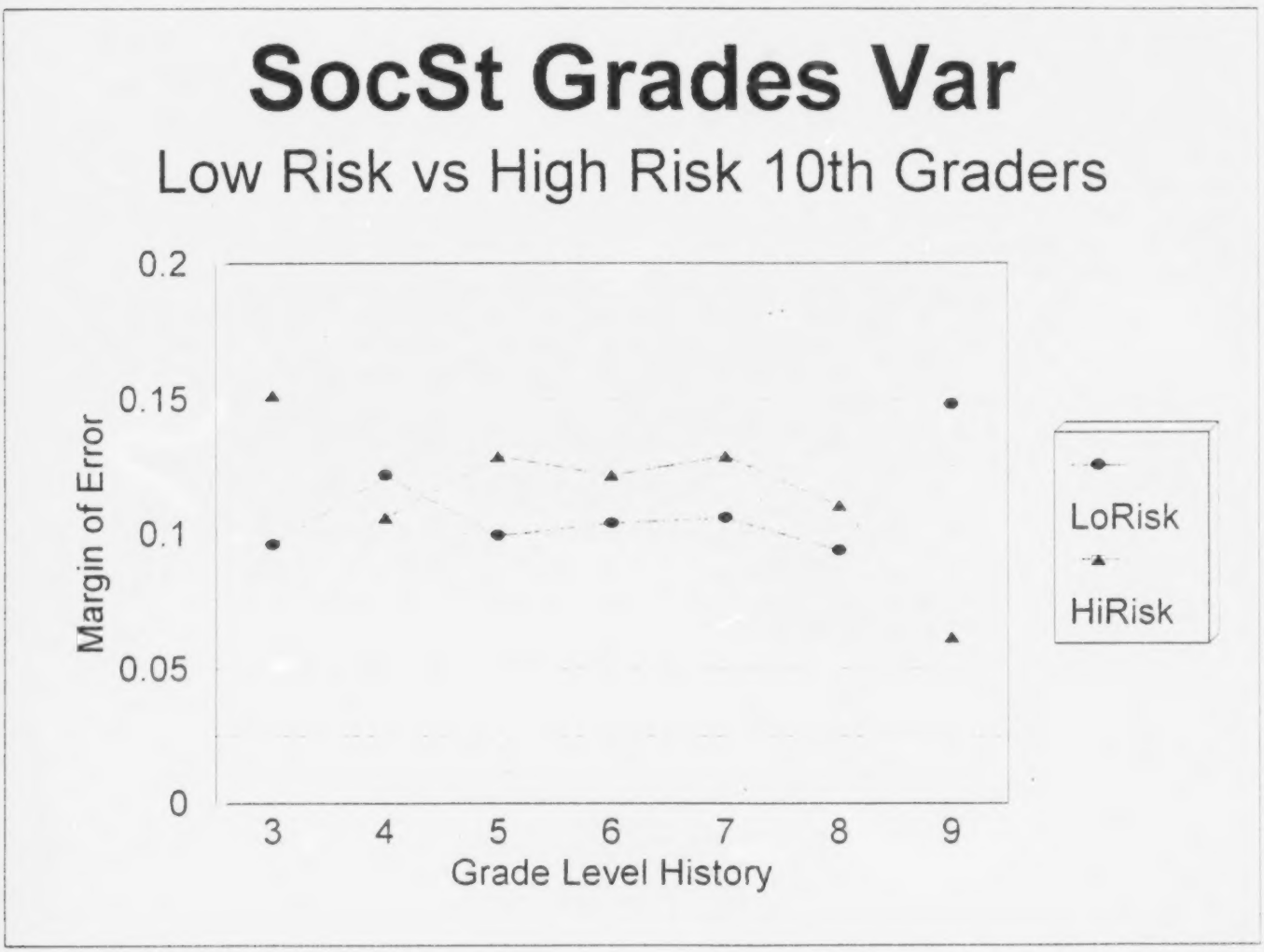

FIGURE 9

MEDIAN PERCENTILE SCORES ON
STANDARDIZED READING ACHIEVEMENT TEST

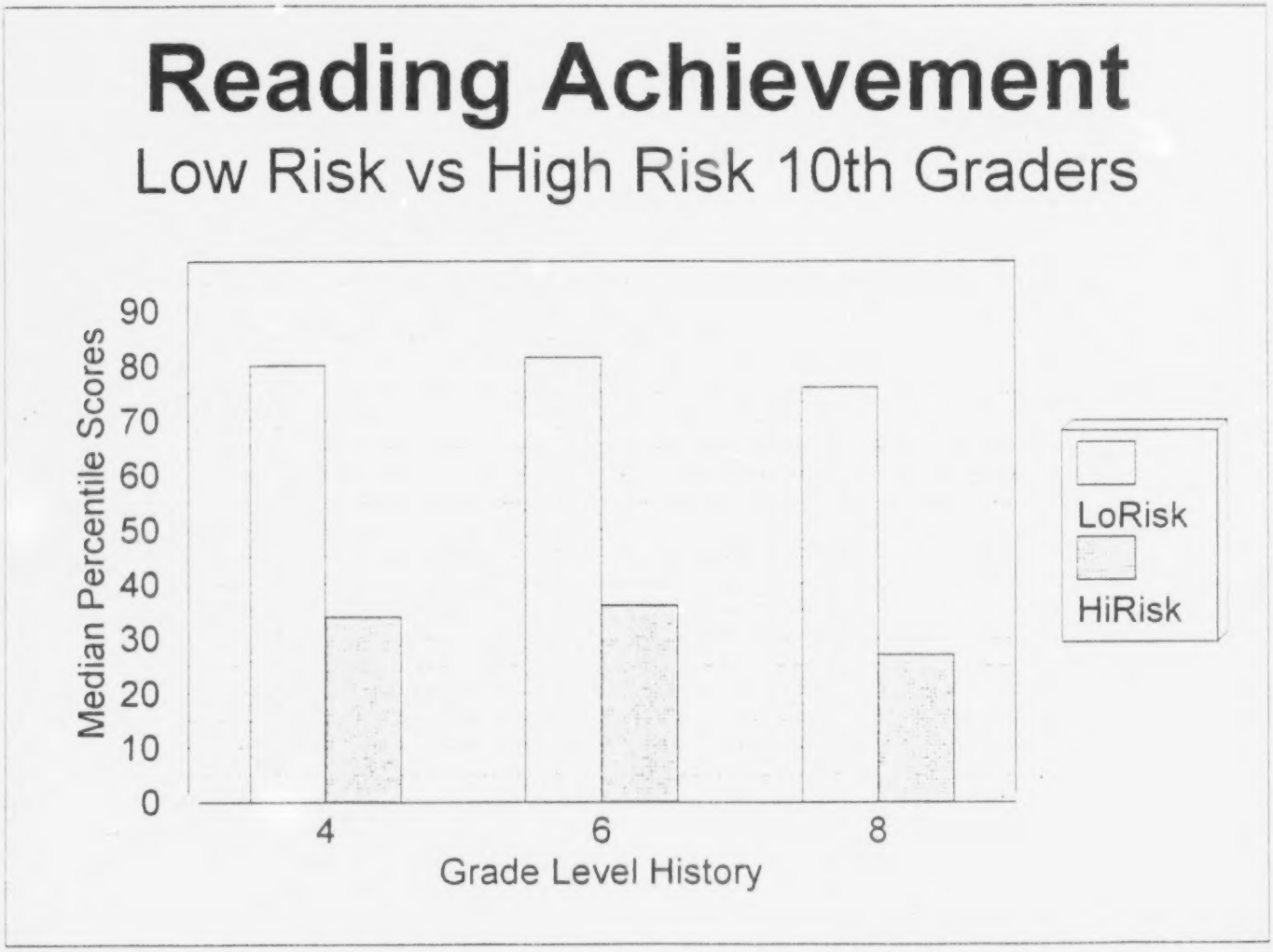

FIGURE 10

MEDIAN PERCENTILE SCORES ON
STANDARDIZED MATHEMATICS ACHIEVEMENT TEST

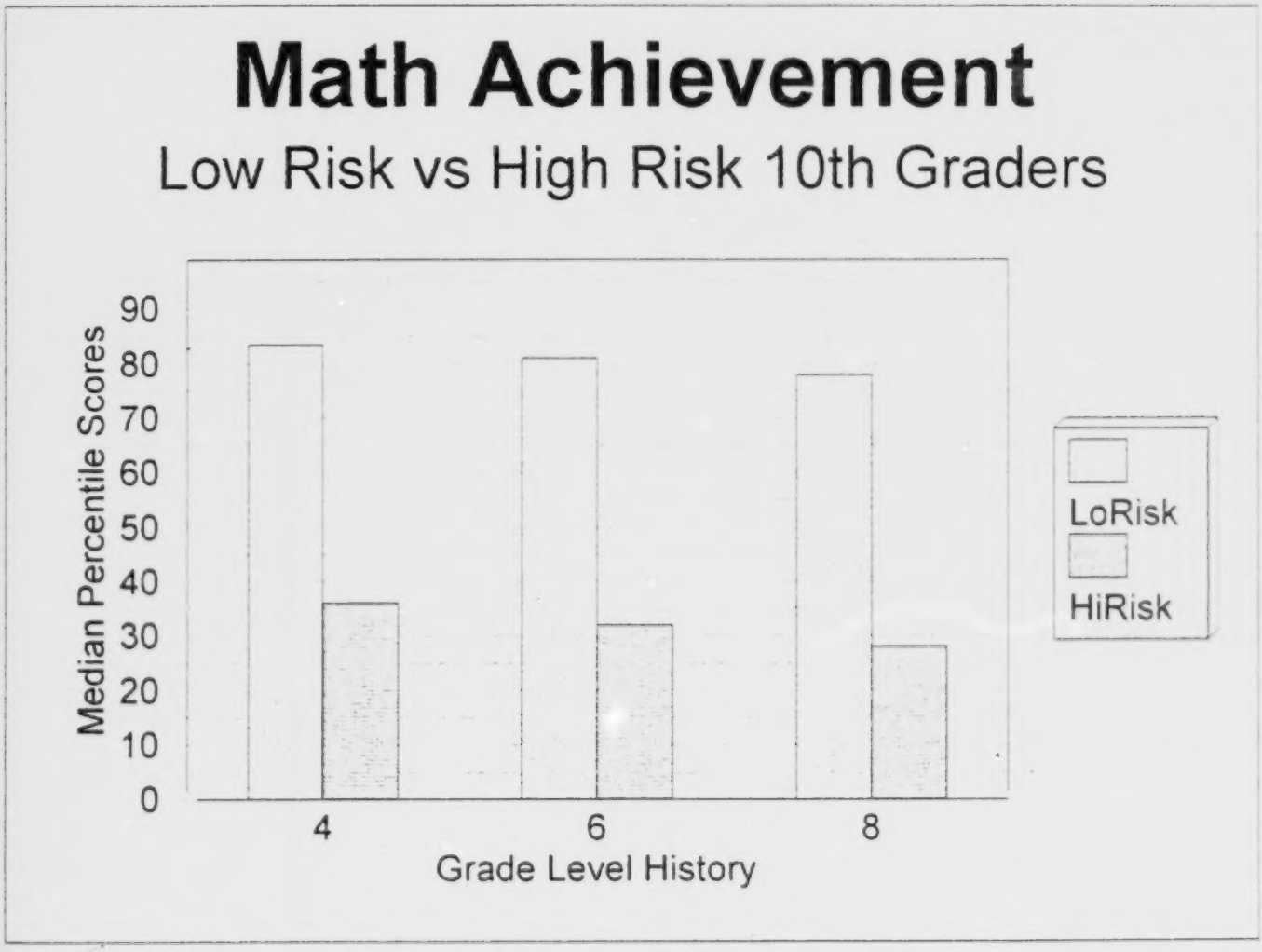

FIGURE 11

MEDIAN PERCENTILE SCORES ON
STANDARDIZED LANGUAGE ARTS ACHIEVEMENT TEST

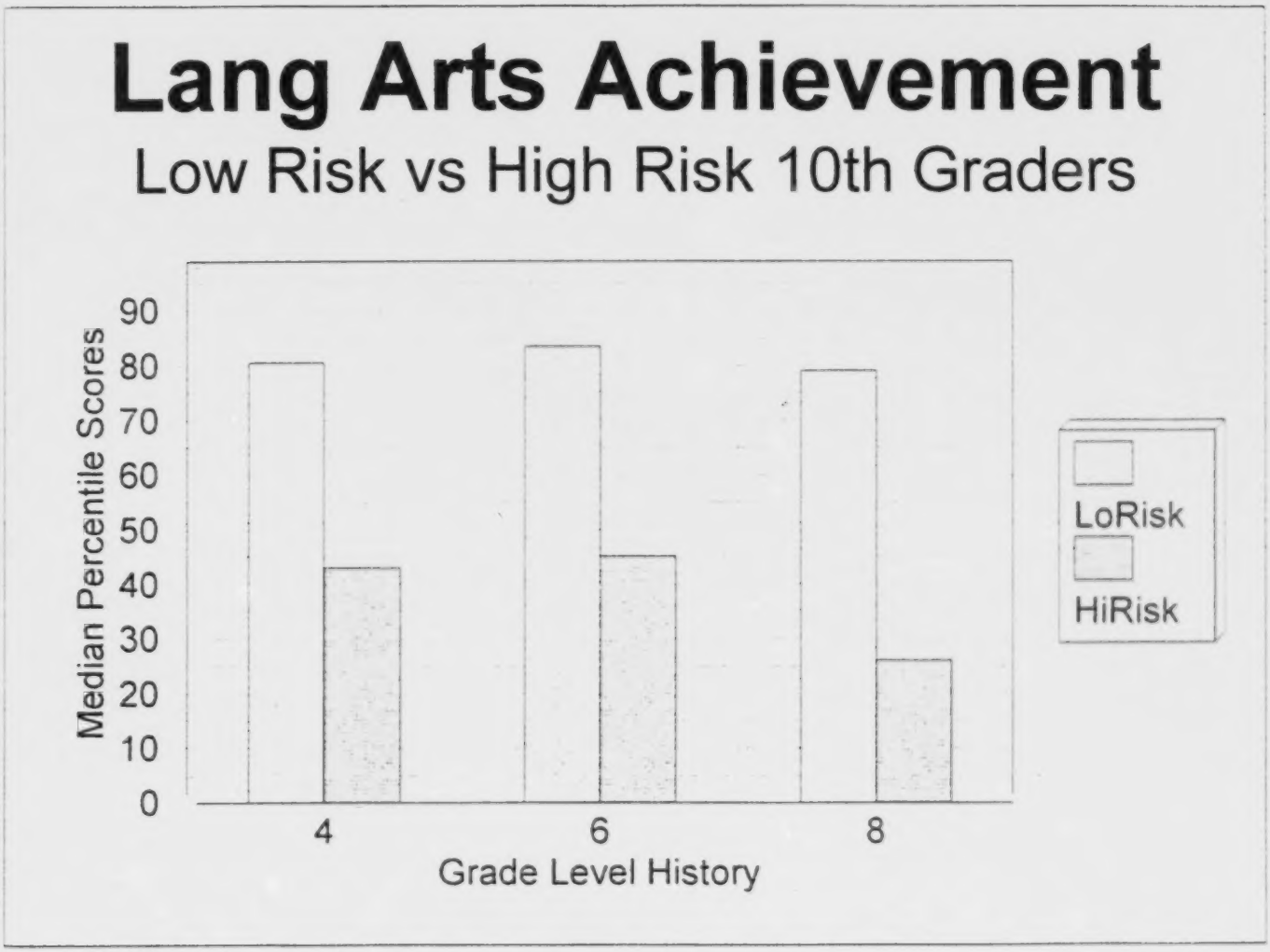

FIGURE 12

MEDIAN PERCENTILE SCORES ON
STANDARDIZED SOCIAL STUDIES ACHIEVEMENT TEST